## PATENT ABSTRACTS OF JAPAN

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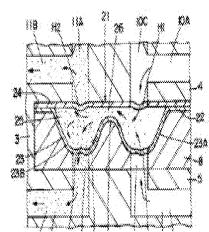
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## (54) BLISTER PACK

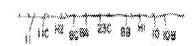
## (57)Abstract:

PROBLEM TO BE SOLVED: To enhance the efficiency of administration by causing medical powders contained in a medical powder storage part to be diffused according to the characteristic of the powders.

SOLUTION: The medical powder storage part 25 of a blister pack 21 is provided with a constricted passage 26 located between an inflow hole H1 and an outflow hole H2 and comprising the constricted section 23C of a swollen part 23. Thus, the flow rate of an air stream flowing from the inflow hole H1 to the outflow hole H2 can be increased by the constricted passage 26, and the air stream that matches the characteristic of the chemical powders can be formed by regulating the area of the constricted passage 26. Thus, by means of the air stream matching the medical powders, the medical powders in the medical powder storage part 25 can be diffused and efficiently mixed into the air stream, so that a specified quantity of medical powders stored in the medical powder storage part 25



can be administered to a patient.



2 of 2

fully conversant with the English and Japanese languages, do Corporation of 1-29, Akashi-cho, Chuo-ku, Tokyo 104-0044, Japan, No. 11-352280 filed in the Japanese Patent Office on the 10th following is a true translation of Japanese Patent Application hereby certify that to the best of my knowledge and belief the Ichikawa-shi, Chiba 272-0123, Japan, and working for day of December, 1999 in respect of an application for Letters I, Satoru Kakeno, residing at 1-2, Saiwai 2-chome,

Signed, this 2nd day of June, 2006

Satoru Kakeno

[DOCUMENT NAME] SPECIFICATION
[Title of the Invention] BLISTER PACK

[Scope of Claim for Patent]

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covering the blistered portion; to define a medical powder storage chamber by hermetically a lid panel affixed onto an obverse of the base panel base panel having a blistered portion; and A blister pack comprising:

piercing in the blistered portion. provided between inflow and outflow holes pricked by wherein a flow-constriction orifice passage is

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inhaling operation. flow-constriction orifice passage and opens during [Claim 2] The blister pack as claimed in claim 1, which comprises a flap valve disposed in the

[Claim 3] A blister pack comprising:

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- a base panel having a blistered portion; and
- covering the blistered portion; to define a medical powder storage chamber by hermetically a lid panel affixed onto an obverse of the base panel

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between inflow and outflow holes pricked by piercing in the blistered portion to pre-store medical powder therein. [Claim 4] A blister pack comprising: wherein a medical powder collecting portion is recessed

a base panel having a blistered portion; and

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covering the blistered portion; to define a medical powder storage chamber by hermetically a lid panel affixed onto an obverse of the base panel

wherein the blistered portion comprises:

of an outflow hole pricked by piercing in the blistered blistered portion and defines a deep portion at a side at a portion. side of an inflow hole pricked by piercing sloped surface which defines Ø shallow portion

[Claim 5] A blister pack comprising:

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a base panel having a blistered portion; and

covering the blistered portion; to define a medical powder storage chamber by hermetically a lid panel affixed onto an obverse of the base panel

wherein the blistered portion comprises:

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outflow hole pricked by piercing in the blistered portion. portion and defines a shallow portion at a a side of an inflowhole pricked by piercing in the blistered [Detailed Description of [1000] a sloped surface which defines a deep portion at the Invention] side 0 Hi

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[Field of the Invention]

granular suitable patient by way of breathing action of the patient to an inhalant medicator used to prescribe present invention relates 0 H powdered medicines toward within lungs of († 0 a blister pack

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[Prior Art]

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inhalant medicator used for an inhalation treatment where equipped at including a capsule housing chamber at one axial end and a dose of medical powder encapsulated in a inhaled, Of these medications for an asthmatic patient, is generally constructed by the other axial end with an inhalant port a medicator body capsule an ۲. 0

passageway communicating the inhalant port with the accommodated in the capsule housing chamber. atmosphere via the capsule housing chamber, and a pricking through which the medical powder is inhaled, an provided for pricking holes in the capsule

Patent Provisional Publication Nos. 59-88158 storage chambers spaced apart from each other in the set of blisters or a plurality of blistered medical powder 62-41668. Such inhalant medicators have been disclosed in Japanese circumferential direction, for inhalant medication. inhalant medicators utilizing a blister pack having a There have been proposed and developed various and

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[0004]

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blistered portions. powder storage chamber by hermetically covering medicator is mainly comprised of a base panel formed with stored in the medical powder storage chamber. onto an obverse of the base panel to define a medical a plurality of blistered portions and a lid panel affixed The prior art blister pack used Granular or powdered medicines are for the inhalant

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needle-shaped pricking tip, in such a manner as to draws his or her breath while taking the inhalant port inhalant port. communicate the medical powder storage chamber with the blister pack by means of within lungs In order to prescribe the medical powder toward of the patient, holes are pricked in the Under these conditions, when the patient a single plunger having

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medical powder storage chamber to be carried via holes through the medical powder the inhalant port enables medical powder stored in inhalant or her mouth, air flow directed from the pricked port into lungs of the patient. storage chamber into

[9000]

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Thus, it is possible to consecutively dose a patient with a specified amount of medical powder without exchanging medical the blister pack is rotated to intercommunicate another capsule. In order to continuously perform inhalant medication, powder storage chamber and the inhalant port.

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[Task solved by the Invention]

[0007]

ր 5 20 pack, a single plunger is used as the pricking tool. blister packs, pricked or pierced in the blister pack. into the medical powder storage chamber two holes, straightly penetrating the blister pack, are through the medical powder storage chamber from one of two However, pricked holes to the other. in the previously described in order to prick holes in Air introduced flows straight roirg the blister

30 ა 5 powder for one inhaling operation, the powder having different characteristics or properties, flow direction of airflow becomes substantially constant. like), a condensation property, and an amount of medical such as a particle size (fine powder, Therefore, μ. is impossible to adequately in spite 0 fi various sorts diffuse medical flow velocity and granule, of medical 0

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the lungs, thus lowering medical benefits powder storage chamber. As a result of this, the patient some medical powder may be undesirably left in the medical powder in the medical powder storage chamber and thus or granular medicines. cannot inhale a specified amount of medical powder into of powdered

[6000]

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powder storage chamber depending on the property of the pack, which is capable of enhancing the medication accordingly an object thereof is to provide a blister medical powder efficiency by diffusing medical powder stored in a medical aforementioned disadvantages of the prior art, and The present invention has been made to solve the

15 [0010]

[Means to solve the Task]

by hermetically covering the blistered portion. portion, and a lid panel affixed onto an obverse of the of the present invention, a blister pack of the present base panel to define a medical powder invention comprises a base panel having a blistered In order to accomplish the aforementioned objects storage chamber

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N 13 blistered portion. a flow-constriction orifice passage is provided between invention recited in claim 1, is characterized in that inflow and outflow holes pricked by piercing in the In order to solve the previously-noted task, the

[0012]

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medical-powder property. property of medical powder, it is possible to create and flow-constriction orifice passage properly adjusting passage, and whereby the flow velocity becomes fast. storage chamber is further directed to the outflow hole, realize the airflow passes through the flow-constriction orifice flowing With the previously noted arrangement, when airflow from the inflow hole into the optimal airflow suitable for the passage area of depending on the medical the the powder

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orifice passage and opens during inhaling operation. [0014] flap valve is further disposed in the flow-constriction According to the invention as recited in claim 2,

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[0013]

20 0 H inhaling operation only in a state where the inhalation state where the inhalation force is permit airflow through the opened valve. valve opens the flow-constriction orifice passage powder force is strong enough to adequately diffuse medical possible to restrict the to a level enough to diffuse medical powder, the flap valve HOOK with the previously-noted arrangement, in the case by airflow. When the inhalation force has been increased inhalation force during inhaling operation, closes the flow-constriction orifice or limit inhaling operation weak, and to permit Thus, it flap

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þ medical powder collecting portion is recessed between According to the invention as recited in claim

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blistered portion to pre-store medical powder therein. inflow and outflow holes pricked by piercing in the

of medical powder in air. Thus, it is possible to uniformly diffuse a small amount powder located in the medical powder collecting portion. the airflow acts to gradually fling up and diffuse medical [C100] storage chamber is further directed to the outflow hole, flowing from the inflow hole into the medical powder With the previously-noted arrangement, when airflow

portion and to define a deep portion at a side of an outflow hole pricked by piercing in the blistered portion. of an inflow hole pricked by piercing in the blistered surface is formed to define a shallow portion at a side recited in claim 4, in the blistered portion, a sloped On the other hand, according to the invention

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25 20 storage chamber out it is possible to flow the medical powder stored in the powder accumulated around the outflow hole, and as a result toward the outflow hole forcibly pushes out the medical is accumulated around the outflow hole by way of the sloped With the previously-noted arrangement, the medical stored in the medical powder storage chamber, Thus, airflow flowing from the inflow hole of the outflow hole at a breath.

define a deep portion at a side of an inflow hole pricked in the blistered portion, a sloped surface is formed to According to the invention as recited in claim

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portion at a side of an outflow hole pricked by piercing by piercing in the blistered portion and to define a shallow in the blistered portion.

[0020]

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powder, stored in the medical powder storage chamber, is accumulated around the outflow hole by way of the sloped in air. thereby ensuring uniform dispersion of medical powder is possible surface. [0021] with the previously-noted arrangement, the medical directly with the medical powder, and thus it Thus, to adequately diffuse airflow flowing out of the inflow hole the medical powder,

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[Description of the Preferred Embodiments]

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the [0022] invention, which is used drawings Hereinafter described in detail with reference is the blister for an inhalant medicator. pack of the embodiment

0 Figs. 1 to 7 is the construction of the inhalant medicator, which is suitable to the blister pack of the embodiment. invention. Figs. 1 to 12 show the first embodiment of the present First, hereunder explained in reference to

25 an inhalant port 7 (described later). constructed by a medicator body 2 (described later) and assembly. Reference The inhalant medicator assembly 1 is mainly sign 1 denotes an inhalant medicator

ω O inhalant Reference sign medicator assembly 1. 2 denotes the medicator body As shown in Figs. 0 fi W and

[0024]

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supporting a support portion 13 of a pricking tool 12 medicator-body portion 4 is formed on the outer periphery an internal thread portion 3A into which the inhalant joining portion 3 is formed on its inner periphery with medicator-body portions 4 and 5. As a whole, the medicator mounting groove 6 and extending axially from the joining portion 3, a holder (described later). of the upper medicator-body portion 4 by a clearance space medicator-body portion 5 spaced apart from the underside joining portion 3, a substantially semi-circular lower medicator-body portion 4 extending axially from the 7 is installed, a substantially semi-circular upper cylindrical joining portion 3 into which an inhalant port connecting upper and lower medicator-body portions 4 and The medicator body 2 is comprised of a substantially the medicator body 2 is substantially cylindrical in shape. Also, a pricking tool guide 4A 7 is screwed. defined between the upper and lower On the other hand, the upper ß h. constructed by integrally capable of slidably

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[0025]

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portion 4, and the bottom surface 6C corresponding to of the joining portion 3, the ceiling wall surface 6B namely a groove innermost end surface the upside of lower medicator-body portion 5. corresponding to formed in medicator body 2. The holder mounting groove is defined in holder mounting groove 6 Reference sign 6 denotes a holder mounting groove the medicator the underside of upper medicator-body is formed body by t† 0 three 6A forming part open surfaces, And thus, t

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periphery of a blister pack holder end surface 6A of the groove directions, that is, circular-arc axial direction of the medicator body. The innermost shape that leftwards and rightwards, and in fits the contour of is formed into ω, a concave the outer

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10 0 of rotation of the blister pack holder 8. portion 6D is engaged with a guide groove 8E (described 6D extending upwards from a substantially central portion the bottom surface central protruded portion 6D functions as a center The medicator body is formed with a protruded portion 0 of holder mounting groove The protruded

later).

[0027]

N 0 4 an external screw portion 7A. The top end of inhalant POTT The inhalant port 7 is formed on its outer periphery with installed on the joining portion 3 of medicator body 2. 7 is configured in a manner so as to gradually Reference sign 7 denotes an inhalant port that

25 passageways 7B serves to avoid the difficulty in breathing breathing action through inhalant port 7. inhalant port 7 of the of illustrative simplicity). air passageways are shown in the drawing for the purpose auxiliary air passageways 7B,.7B, ... (only two auxiliary diametrically small-sized. The root portion of inhalant Ø installed on the medicator 7 is formed with a plurality of radially-extending by increasing a inhalant medicator during quantity of air flowing into Each of the auxiliary body by screwing Inhalant the port the air

portion 3A of joining portion 3. external thread portion 7A into the internal thread

0 7 0 U۱ or a radially-outward pin insertion hole 8C spaced apart pin insertion hole 8B and an outflow pin insertion hole from each other in the radial direction of the holder 8A with an inflow pin insertion hole or a radially inward The holder is formed in each of recessed fit portions respective eight recessed fit portions of the holder. 21 (described later) are integrally fitted into the cavities. Eight blistered portions 23 of blister pack radially-elongated, substantially semi-cylindrical fit portions BA are configured or formed as eight apart from each other by 45 degrees and located near its circumference. fit portions 8A, 8A, ..., 8A circumferentially spaced The holder 8 is formed on its upside with eight recessed groove 6 of medicator body 2. As clearly shown in Figs. detachably rotatably mounted into the holder mounting and 7, the holder 8 has a substantially disc shape. Reference sign 8 denotes the holder 8 that In the shown embodiment, eight recessed

[0029]

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portions 9B 8B and 8C. account the installation positions of pin insertion holes spaced apart of inflow pin insertion holes 8B and circumferentially eight recessed fit portions 8D, 8D, ..., 8D located inside The holder 8 is also formed on its underside with In the shown embodiment, spherical ball included in a positioning mechanism from each other by 45 degrees, taking

pair 8D of the eight recessed fit portions. Furthermore, rotation of the holder 8. guide groove groove 6 to guide the holder 8 (described later) are fitted to one diametrically-opposed [0030] toward the center of rotation of the protruded portion 6D of the holder mounting 8 E is also formed on the radially The guide groove 8E is formed extending from the center of underside with the the holder 8

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mounting groove 6 mounting groove, until upside of the holder. thereon the blister pack, is inserted the central protruded portion 6D under a condition where groove procedures. blister pack 21 The holder 8 is rotatably mounted into the holder reaches the protruded portion. First, the guide groove 8E in accordance with the following is installed on and fitted to the Thereafter, the holder installing the innermost end of されたの is engaged with the holder the guide

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25 20 30 portion 6D in such a manner as to sandwich therebetween respective ball housing bores 9A in an unremovable fashion includes spring-loaded spherical balls 9B housed in the mounting groove spring-loaded ball housing bores 9A each closed at in Figs. surface 6C (see Fig. 5) provided in the medicator body 2. that central protruded portion, and formed in the bottom point-symmetrical with respect Reference signs 9, the inside diameter of 4 and 5, the positioning mechanism 9 (lower medicator-body portion 5) 0 The positioning mechanism 9 9 denote positioning mechanisms the opening end of each t 0 the protruded of holder includes As shown

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bias the balls 9B in their protrusion directions. ball housing bores 9A in a manner so as to permanently and coil springs 9C operably disposed in the respective spring-loaded ball housing inside diameter of the other portion of bore is slightly the bore, less than

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pricking position of the pricking tool 12, that is, pack 21) is efficiently positioned in is, one of medical powder storage chambers 25 of blister one of radially-elongated recessed fit portions 8A (that recessed fit portions with the rotary motion of the holder, engagement between the spring-loaded balls recessed fit portions 8D of the holder 8. into the holder mounting groove 6, the spring-loaded balls [0033] positioning mechanism 9, under a condition where set inhalation position for inhalant can be brought With the previously-noted arrangement of the into engagement with the holder when the holder 8 has been mounted a predetermined medication. t he By way of the œ and the respective ji K

portion 4, and whose one axial end opens at end of the upper medicator-body portion 4 to the atmosphere portion 8A of the holder 8. 0 10 includes an upper axially-extending air passage 10A formed in the medicator body 2. introduced or directed toward within the is provided to permit the atmosphere outside air to similar Reference sign 10 denotes an inflow air passageway is bored manner, Ö formed in the upper medicator-body the inflow air passageway Also, the inflowair passageway The inflow air passageway recessed one axial

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pin insertion hole 10C includes a lower axially-extending air passage 10B which radially-extending pin insertion hole is fluidly portion 4 toward the lower medicator-body portion 5. pricking that inflow air passageway also includes a radially-extending lower medicator-body portion 5 communicated with the other axial end of each of the upper and whose one axial end opens at bored or formed in the lower medicator-body portion the pin insertion hole radially tool guide 44 formed in the medicator body via the upper medicator-body air to the atmosphere. passages one axial end of extends 10A and 10B. the The

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15 10 holder 8, when one of communicate with the inflow pin insertion hole 8B of the holder lower axially-extending pin is positioned in insertion hole 10C is configured to be able to the recessed the pricking position. fit portions 0 H

<u>4</u> medical powder storage chamber 16D of the blister extending in parallel with passageway 11 includes a pin insertion hole 11A radially formed in the medicator body 2. 祖上下 medicator-body portion 4 via the joining portion 3 toward upper outflow air passage axially extends from the upper passage 11B, is provided t O passage is fluidly communicated with the pin insertion Reference sign 11 denotes an outflow air passageway flow into the inhalant port 7. inflow air passageway 10, an upper outflow and a lower outflow air port. to permit one axial medical powder stored in the the The outflow air passageway end of the upper outflow pin insertion hole passage The outflow 11C. 100

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communicated with the pin insertion hole axial end of space of the inhalant port 7. hole 11A, whereas the other axial end opens to the interior inhalant port 7. other axial end opens to the interior space of the the lower outflow air passage In a similar manner, one 11A, is fluidly

[0035]

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permanently biasing the support portion and the portion 13 and the upper medicator-body portion 13, and whose tips are inserted into the respective pin by a cylindrical inner peripheral wall of the pricking 1, the pricking tool 12 includes the support portion 13 includes a return spring 15 disposed between the support insertion holes 10C and 11A. root portions are fixedly connected to the support portion tool guide 4A, and a pair of parallel pins 14, 14 whose to prick holes in the blister pack 21. As shown in Fig. toward their Reference sign 12 denotes the pricking tool used periphery is slidably supported or guided initial positions. The pricking tool also pins

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[0036]

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panel outflow holes or outflow ports H2 are pricked in the blistered portion 23 of a base panel 22 and a the respective pin insertion holes 10C and 11A. 12 into the pricking tool guide 4A against the bias of the spring 15, and thus the pins 14, 14 are inserted into tips of pins 14, 14 penetrate the blister pack result of this, inflow holes or inflow ports H1 and When pushing the support portion 13 of pricking tool 24 of blister pack 21 (see Figs. 11 and 12). respectively Thus,

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14 panel define eight medical powder soon as the pushing force applied to the support portion detailed hereunder, eight blistered portions of the base conjunction with the lid panel. After pricking, are returned back to their initial positions by way is removed, the support portion 13 and the pins the spring bias. storage chambers 25

[0037]

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<u> </u> 75 used for the previously-discussed inhalant medicator. medicator. 8 to embodiment, [8600] a lid panel 24, and a medical powder storage chamber 10 is the blister pack of the Hereinafter described in detail in reference to Figs. Reference sign 21 denotes a blister pack of the first which is detachably attached to the inhalant Blister pack 21 is comprised of a base panel embodiment which is

25, and a flow-constriction orifice passage 26.

[6200]

20 М Ф a thin-walled disc shape and made of aluminum material, 23 are located near the circumference of the base panel around its entire circumference. The blistered portions 22 has a plurality of blistered portions 23, 23, ... formed synthetic resin or the like. each other 22, and formed as eight convex portions spaced apart from base portion of the blister pack 21. Base panel 22 has Reference in the circumferential direction. sign 22 denotes Additionally, a base panel, which base panel

[0040]

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) (1) formed as the radially-elongated convex portions shown in Figs. 9 and 10, the blistered portion

70 ហ panel and the lid panel 24 at a connecting point between inner wall of lid panel 24. convex portions 23A and 23B in close promimity the radially-inward and radially-outward hemispherical flow-constriction portion is configured to provide hemispherical convex portions 23A and 23B. between the radially-inward and radially-outward portion 23B. radially-outward, substantially hemispherical convex substantially hemispherical convex portion Each of the blistered portions includes a radially-inward, each extending in the radial direction of base panel 22 flow-constriction orifice passage A flow-constriction portion 23C is formed 26 between the base 23A t O

0 15 in base panel 22 by the lid panel 24, medical powder storage hermetically covering the blistered portions 23 formed 23 and the lid panel. chambers aluminum material, Lid panel 24 has a thin-walled disc shape and made of [0042] principal surface or the obverse of base panel Reference sign 24 denotes the lid panel affixed onto 25 are defined between the blistered portions synthetic resin, or the like. 22.

medical powder storage chamber 25 chamber defined between each of the blistered portions flow-constriction orifice passage 26 is formed in each of medical powder 23 and the lid panel 24. Reference sign 25 denotes the medical powder storage Medical powder storage and arranged between chambers 25. ĸ pre-stored in the The

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the previously-described inflow holes H1 and outflow holes

[0043]

10 15 IJ portion 23C of the blistered portion 23 and the lid panel outflow holes H2 and defined between the flow-constriction orifice passage arranged between inflow holes H1 and on the property of medical powder and good medical powder proper turbulent flow within the medical powder storage the flow-constriction orifice passage functions to cause storage chamber 25 to the outflow holes H2. Additionally, inflow holes H1 via the interior of the medical powder to increase the flow velocity of air flowing from the Burxrw chamber 25, [0044] The flow-constriction orifice passage 26 functions Reference sign action and diffusion can be ensured. and whereby airflow can be created depending N 6 denotes the flow-constriction

Hereinbelow described in detail present embodiment is constructed as previously discussed medication through which a patient inhales medical powder, 11 and 12 are the and the flow of air and the flow of medical powder during inhalation. The inhalant medicator and blister pack 21 of the preliminary operation of inhalant in reference to Figs.

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25 [0045]

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body under a condition in which the outermost end of guide 8, must be aligned with respect to the axis of the medicator groove 6 of medicator body 2. the guide groove 8E, formed in the underside First, the holder is removed from the holder mounting During removal of the holder, of the holder

against the bias produced by the positioning mechanism be removed from the medicator body by pulling the holder groove faces the inhalant port 7. Then, the holder 8 can

[0046]

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are rotatable be integrally connected to and positioned with respect fit portions 8A of the holder 8, the blister pack 21 can blistered portions 23 (the medical powder storage chambers to the holder 8, and thus the blister pack and the holder on the upside of holder 8. At this time, by fitting the of the blister pack 21 to Then, blister pack 21 is together with each other. the respective recessed fitted to and installed

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30 25 и 0 15 operations direction. mechanism 9 with the protruded portion, balls 9B, 9B of the positioning groove until the innermost end of the guide groove engages holder guide groove 6. with the guide groove 8E so as to push the holder 8into port 7, and also the protruded portion 6D must be engaged end of the guide groove is directed toward the inhalant groove 6. In this case, the guide groove 8E must be aligned holder 8, the holder 8 is mounted into the holder mounting with the axis of the medicator body so that the outermost has been completely pushed into the holder mounting of the holder 8 by rotating the holder 8 in an arbitrary possible After the blister pack 21 has been installed on the as discussed above, By way of a are engaged with the recessed fit portions to accurately position one of In this manner, after the holder series of preliminary setting 3 shown in Fig. the medical

predetermined pricking position (the set inhalation powder position of medical powder). storage chambers 25 of blister pack 21 at the

[0048]

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15 10 20 pricked in the blistered portion 23 and in the lid panel holes H1 communicating inflow air passageway 10 pack 21 held at the predetermined pricking position, the of a patient. of inhalant medication made by virtue of breathing action pricked in the blistered portion 23 and in pin insertion hole, and at the same time two opposed outflow support portion holes 24 by means of one the inflow holes H1 with the chamber 25 insertion hole. the outflow by means also communicated through the outflow holes H2 with Hereunder described in detail is the actual operation H2 communicating outflow air passageway 11 are of blister pack 21 is communicated through As shown in Figs. 11 and 12, two opposed inflow Of air passageway 11. First, in order to prick holes in the blister the other 13 As a result, the medical powder storage of the two pins 14 inserted into the of pricking pin 14 inserted into the pin inflow air tool 12 is pushed or passageway 10, the lid panel

[0049]

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10 holes medical powder storage chamber 25. or her mouth, air passes through the inflow air passageway via red directed via the inflow holes Under these conditions, when the patient draws his H2 passes through the the two inflow holes H1 and breath while taking the inhalant port flow-constriction orifice H1 toward the outflow At this time, then flows into 7 in the air his

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during breathing action, the patient can inhale a cavity and trachea into lungs with the aid of the turbulent specified amount of medical powder via his or her oral port 7 by virtue of the turbulent flow. holes H2 and the outflow air passageway 11 into the inhalant pre-stored in the storage chamber 25 through the outflow effectively flow out almost all of the medical powder medical powder. creates proper turbulent flow. 26 increases the flow velocity of the airflow and also passage 26. Thus, the flow-constriction orifice passage possible to adequately diffuse and micronize the As a consequence, As a result of this, it As discussed above, it is possible

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[050]

25 1 5 20 blister pack 21 is replaced with a new blister pack for operation, it is possible to continuously inhale medical portions 8D of holder are thus engaged with the balls inhalant medication is needed, the holder 8 the next total can be continuously made. the previously-noted pricking operation and inhaling 9B of the positioning mechanism 9. After this, through The adjacent, next diametrically-opposed recessed fit rotated from the current angular position by 45 degrees. be completed. is removed from the medicator body, this manner, In this manner, eight inhalant medications in inhalation medication. Subsequently to the above, when the second the first inhalant medication can Thereafter, the holder and then the is first

[0051]

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10 IJ 0 o N 0 Hi 23. flow-constriction portion 23C of the blistered portion the embodiment, the flow-constriction orifice passage is provided in the medical powder storage chamber the blister pack 21 medical powder the By means of Þs airflow flowing through the interior Set and outflow holes H2, and defined by forth above, according to the blister pack the flow-constriction orifice storage chamber 25 canand arranged between the inflow passage the

μ 5 20 property of the administrated medical powder, depending on the property of medical powder. efficiently reliably prescribe a specified amount condensation property, and an amount of medical powder powder, thereby enhancing the reliability of the inhalant medical (turbulent flow) suited for the property of medical powder chamber particle size (fine powder, granule, this, adjusting the one powder pre-stored in medical 25 into lungs of inhaling operation. it is possible to form the controlled airflow This enhances medical benefits of the medical flow passage ρ patient by Thus, it is possible area depending on the powder way of breathing 0 the like), be adjusted As a result storage space of such as þ

medicator.

[0052]

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flow-constriction orifice passage 26 depending on various orifice passage 26. medical powder is stored, has the flow-constriction medication efficiency. Additionally, ÓĦ medical powder, the blister pack 21 itself, in which Thus, it is possible to form a suitable thereby more greatly enhancing

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elements in the first embodiment will be applied to the by piercing in he blistered portion. while detailed description of the same reference signs corresponding elements used in the second embodiment, the disclosure, the same reference signs used to designate second embodiment, for the purpose of simplification of formed between the inflow holes and outflow holes pricked by a deeply-recessed medical powder collecting portion blister pack of the second embodiment is characterized the second embodiment. Next, Figs. 13 through 16 show the blister pack As detailed hereunder, In explaining the

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will be omitted.

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panel 35, and a medical powder storage chamber 36. first embodiment. embodiment used instead of the blister pack 21 of the Reference sign 31 denotes a blister pack of the second 32, a medical powder collecting portion 34, a lid Blister pack 31 is comprised of a base

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from the base panel 22 of the first embodiment, in that portions 33, 33, ... formed around its entire circumference. Additionally, base panel 32 has a plurality of blistered base panel 32 has a thin-walled disc shape and made of pack 31 of the second embodiment. aluminum material, the base panel 22 of the blister pack of the first embodiment, Reference sign 32 denotes the base panel of blister panel 32 of the second embodiment is different synthetic resin or the like. In the same manner

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the shape of each blistered portion 33 differs from that

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first embodiment. of each blistered portion 23 of the blister pack of the

[9500]

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33 is formed as a substantially elliptical convex portion. medical powder radially-inward, shallow pricked portion 33A in which Each of the blistered portions 33 the previously-noted outflow hole H2 radially-outward, shallow pricked portion 33B in which or recessed in the blistered portion 33 midway between radially-outward, shallow pricked portion 33B. the radially-inward, shallow pricked portion 33A and the previously-noted inflow hole H1 is pricked, and As best seen in Fig. 14, each of the blistered portions collecting portion 34 is deeply formed includes a is pricked. The

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15 [0057]

and serves as an air-flow regulation means. collecting portion formed in the blistered portion 33 powder Reference sign 34 denotes the medical powder collecting portion 34 is formed as The medical

20 25 deeply-recessed medical powder collecting portion and in the medical powder collecting outflow hole H2 is pricked. Medical powder is collected radially-outward, shallow pricked portion 33B in which arranged between the radially-inward, in which inflow hole H1 is pricked, and the portion. shallow pricked

[8500]

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24 of the first embodiment the lid panel 35 has a thin-walled lid panel affixed onto the obverse of base panel 32. the same manner as On the other hand, reference the previously-described lid panel sign 35 denotes the H

disc shape and made of aluminum material, synthetic resin, or the like.

[6500]

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blistered portion 33 and the lid panel 35. medical powder storage chamber defined between the portion of medical powder powder collecting portion 34. is stored in the other hand, the medical powder storage reference sign is collected in the medical 36 denotes the chamber 36. Medical powder Þ

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chamber 36 and the flow of medical powder within the storage constructed as previously discussed. chamber the flow of air passing through the medical powder storage described in detail in reference to Figs. 15 and 16 are The blister pack 31 of the second embodiment during inhalation. Hereinbelow

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of inhaling actions are repeated, stored in the storage chamber 36 can be gradually reduced. is supplied into the outflow holes H2. When several times located at the top of the medical powder collecting portion at the initial stage of the inhaling action, as shown pricked in the blister pack 31 and in the lid panel. functions to fling up and diffuse a part of medical powder in Fig. 15, air introduced through the inflow holes these conditions, when the patient draws his or her breath this time, as clearly shown in Fig. 16, airflow passing The upflung and diffused portion of medical powder First, inflow holes H1 and outflow holes H2 are taking the inhalant port 7 in his or her mouth, the medical powder Under

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N 0

diffused medical powder is supplied into the outflow holes up and diffused from the uppermost portion, and thus the collected in the collecting portion 34 is gradually flung collecting portion 34, and therefore medical powder H2 little by little. through the inflow holes H1 enters the medical powder

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medication is made to a patient having powder flow mass. Additionally, in the case that inhalant diffuse the medical powder stored in the storage chamber medication during the breathing action. from being choked up with such a large amount of medical into the outflow holes H2, thus avoiding the outflow holes air/medical powder mixture in one breath from being flown 36 little by little, thus preventing a large amount during the inhalant medication, thus ensuring a stable This prevents the patient from getting a fit of coughing the patient can inhale the medical powder little by little. embodiment, it As discussed above, ۲. possible to fling up and uniformly according to the þ weak second trachea,

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N 5 pack of the third embodiment is blistered portion the third embodiment. Next, Figs. 17 through 20 show the blister formed with a As detailed hereunder, the blister sloped surface that a characterized by the

pack of

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30 a deep portion. the purpose of simplification of the disclosure, the In explaining the third embodiment,

outflow holes penetrating the blistered portion is formed

a shallow portion,

whereas

a side of the

is formed as

side of the inflow holes penetrating the blistered portion

elements used in the third embodiment, while detailed same reference signs used to designate elements in the description of the same reference signs will be omitted. [0064] embodiment will be applied to the corresponding

panel 42 , a sloped surface 44 , a lid panel 45 , and a medical powder storage chamber 46. first embodiment. embodiment used instead of the blister Reference sign 41 denotes a blister pack of the third Blister pack 41 is comprised of a base pack 21 of the

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[0065]

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75 N 0 portions 43, 43, ... formed around its entire circumference. Additionally, base panel 42 has a plurality of blistered aluminum material, synthetic resin or the like base panel 42 has pack 41 of the third embodiment. different from the base panel 22 of the first embodiment, However, the base panel 42 of the base panel 22 of the blister pack of the first embodiment in that the shape of each blistered portion 43 differs Reference sign 42 denotes the base panel of blister a thin-walled disc shape and made of the In the same manner as third embodiment is

hole H1 is pricked, is formed as a comparatively shallow, inward half of the blistered portion, in which inflow direction of the base panel 42. elliptical convex [9900] As best seen in Fig. 18, each of the blistered portions formed as a portion extending in the radial radially-elongated, substantially The radially-elongated

N 5

from that of each blistered portion 23

of the

first

embodiment.

half of the blistered portion, in which outfloe hole H2 sloped surface 44, while the radially-elongated outward [0067] pricked, þ. formed as a comparatively deep recess.

dimensioned in the blistered portion 43. corresponding to the inflow hole H1 side ratio of the blistered portion 43 increases from the inside corresponding to the outflow hole H2 side. [8900] Reference sign 44 denotes the sloped surface formed or sloped downwards so that The sloped surface 44 is to the outside the convexity

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24 of the first embodiment the lidpanel 45 has a thin-walled lid panel affixed to disc shape and made of aluminum material, synthetic resin, the same manner or the [6900] On the other hand, reference sign 45 like. (C) the previously-described lid panel the obverse of base panel denotes 42 H

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chamber defined between the blistered portion 43 and the mainly stored chamber, such that almost all of the medical medical lid panel 45. outflow [0070] Reference sign 46 denotes the medical powder storage storage powder is stored in the medical powder storage holes medical powder is stored in the medical in the deep recess H2 by way of the sloped surface chamber 46. A predetermined amount corresponding to the powder is 0 Hi

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described in detail in reference to Figs. 19 and 20 are constructed as previously discussed. blister pack 41 O Hi the third embodiment Hereinbelow

ω 0

chamber 46 and the flow of medical powder within the storage chamber during inhalation. the flow of air passing through the medical powder storage

[1200]

**1**0 n H Ų pricked in the blister pack 41 and in the lid panel. at the initial stage of the inhaling action, in Fig. 19, air introduced through the inflow holes H1, while taking the inhalant port 7 in his or her mouth, blistered portion. Therefore, as shown in Fig. 20, the these conditions, when the patient draws his or her breath air introduced through the inflow holes H1 forcibly pushes medical powder mainly stored in the deep recess of the toward within the outflow holes H2, while diffusing the chamber 46 in a manner so as to push out the medical powder flows through the interior of the medical powder storage the medical powder towards the outflow holes H2, and thus flown out of the outflow holes at a breath. the medical powder stored in the storage chamber 46 is First, inflow holes H1 and outflow holes ů d H2 are

20 [0072]

holes H2 is pushed out by way of air flow directed from powder stored in the storage chamber at a breath, such storage chamber 46 for a short time period. the patient can inhale the medical powder stored in the the inflow holes H1 to the outflow holes H2. that the medical power accumulated around the outflow the thirdembodiment, it is possible to flow out the medical burden on According to the structure of the blister **6** patient's lungs. In particular, This reduces As a result, pack of the

prescribe a relatively small amount of medical powder. blister pack of the third embodiment is suitable

0 T 15 U elements in the first embodiment will be applied portion is formed as a deep portion, whereas a side by the blistered portion formed with a sloped surface blister pack of the fourth embodiment while detailed description of the same reference signs corresponding elements used in the fourth embodiment, the outflow holes penetrating the blistered portion is that a side of the inflow holes penetrating the blistered disclosure, embodiment, formed as a shallow portion. will be omitted. fourth embodiment. As detailed hereunder, Next, Figs. 21 through 24 show the blister the same reference signs used to designate for the purpose of simplification of the In explaining the fourth is characterized pack

ა 0 panel 52, a sloped surface 54, a lid panel 55, and a medical first embodiment. Blister pack 51 is comprised of a base embodiment Reference sign 51 denotes a blister pack of the fourth used instead of the blister pack 21 of the

[8200]

powder

storage chamber

56.

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aluminum material, synthetic resin or the like the base panel 22 of the blister pack of the first embodiment, pack 51 of the fourth embodiment. panel Reference sign 52 denotes the base panel of blister 52 has Ø thin-walled disc shape and made of In the same manner

Additionally, base panel 52 has a plurality of blistered

However, the base panel 52 of the from that of each blistered portion in that the shape different from the base panel 22 of the first embodiment, portions 53, 53, ... formed around its entire circumference embodiment. of each blistered portion 53 fourth embodiment is 23 of the differs first

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half of the blistered portion, in which outfloe hole H2 is pricked, is formed as a comparatively shallow recess. sloped surface 54, while the radially-elongated outward hole H1 is pricked, is formed as a comparatively deep, inward half of the blistered portion, in which inflow direction of the base panel 52. elliptical convex portion extending in the radial [7700] As best seen in Fig. 22, each of the blistered portions formed as a radially-elongated, substantially The radially-elongated

Offi corresponding to the inflow hole H1 side to the outside dimensioned or sloped upwards so that the convexity ratio corresponding to the outflow hole the blistered portion 43. the Reference sign 54 denotes the sloped surface formed blistered portion 43 reduces from the inside The sloped surface H2 side.

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[0078]

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disc shape and made of aluminum material, synthetic resin, 24 of the first embodiment the lid panel 55 has a thin-walled the same manner as the previously-described lid panel 1 i d the panel affixed to the obverse of base panel 52. On the other hand, reference sign 55 denotes t H

[0079]

medical powder is stored in the medical powder storage mainly chamber, such that almost all of the medical powder chamber defined between the blistered portion 53 inflow panel Reference sign 56 denotes the medical powder storage storage chamber 56. holes stored in 55. H1 by way of the sloped surface Medical powder the deep recess A predetermined amount of is stored in the medical corresponding to powder and the

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[0800] OT

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powder storage chamber towards the outflow holes H2, and gradually push the medical powder diffused in the medical air introduced through the inflow holes H1 acts to powder at a breath. collision contact with the medical of the inhaling action, as shown in Fig. 23, air introduced inhalant port 7 in his or her mouth, at the initial stage the patient constructed as previously discussed. is gradually flown out of the outflow holes. the inflow through the [0081] and in the lid panel. and outflow holes H2 are pricked in the blister the The blister medical hole inflow holes H1, is brought into direct draws his or her breath while H1 powder stored in the storage pack 51 of side, Therefore, as shown in Fig. 24, the Under these conditions, 0 the fourth embodiment as to diffuse the medical powder First, inflowholes collected in taking chamber

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powder by way of direct collision of the airflow introduced fourth According to embodiment, the structure it is possible to diffuse medical of the blister pack of

powder storage chamber 56. adequately diffusing the medical powder within the medical the medical powder into the entire air flow, while thus, the blister pack functions to uniformly disperse through the inflow holes H1 with the medical powder.

[0082]

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the fifth embodiment is characterized by a embodiment. Next, Fig. 25 shows the blister pack of the fifth As detailed hereunder, the blister pack of

1 5 10 detailed description of the same reference signs will corresponding elements used in the fifth embodiment, while elements in the first embodiment will be applied to the of a strong inhaling action. passage so that the flap valve fully opens only in presence and a flap valve disposed in the flow-constriction orifice inflow and outflow holes pricked in the blistered portion flow-constriction orifice passage located between the disclosure, embodiment, the same reference signs used to designate for the purpose of simplification of the In explaining the fifth

[6083]

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be omitted.

panel 62, a lid panel 65, a flow-constriction orifice passage 66, first embodiment. Blister pack 61 is comprised of a base embodiment used instead of the blister pack 21 of the Reference sign 61 denotes a blister pack of the fifth and a flap valve 67.

[0084]

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the base panel 22 of the blister pack of the first embodiment pack 61 of the fifth embodiment. Reference sign 62 denotes the base panel of blister In the same manner as

portions 63, 63, ... formed around its entire circumference. Additionally, base panel 62 has a plurality of blistered base panel 62 has aluminum material, a thin-walled disc shape synthetic resin or the and made

convex portion 63B, and a flow-constriction portion 63C Each of the blistered portions 63 includes a provided between the radially-inward convex portion 63A and a radially-outward [0085] two convex portions 63A and 63B.

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٦ ٦ 40 disc shape and made of aluminum material, synthetic resin, ŗp or the like. However, the lidpanel of the fifth embodiment 24 of the first embodiment the lidpanel 65 has a thin-walled the same manner lid panel affixed to the obverse flow-constriction orifice passage 66. is different from the lid panel 24 of the first embodiment, the flap valve that lid panel On the other hand, reference sign 64 67 which opens and closes the **S** & 64 is formed at the previously-described lid panel of base panel 62. its inner denotes wall

of the two convex portions of the medical powder storage upstream side chamber defined between the blistered portion 63 and the lid panel 64. chamber 65. Reference sign 65 denote the medical powder storage Medical powder is pre-stored (that rs, an inward convex portion 63A) in only the

N 0

[9800]

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[0087]

holes H2 pricked in the same manner as the first embodiment passage 66 arranged between the inflowholes H1 and outflow Reference sign 9 denotes the flow-constriction

powder into the downstream convex portion, the flap valve close the flow-constriction passage 66. sign 67 denotes the flap valve serving as the valve body of the blistered portion 63 and the lidpanel 64. convex portions, with the flow-constriction passage 66 is opened to permit fluid-communication between the the patient's inhalation force becomes strong enough to flap valve 67 is kept at its closed position indicated flow-constriction passage 66. attached to and defined between the solid line in Fig. 25, the patient is weak during inhaling operation, the medical powder and to disperse the medical the lid panel 64 to open and close the flow-constriction portion in a manner so as to fully When an inhalation force Conversely, when Reference

[8800]

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opened.

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of airflow exceeds a strong airflow level enough to diffuse within the designed to permit medical powder to be prescribed toward is possible to limit medical powder from being prescribed of the inhalation force. toward within lungs of a patient by adjusting the magnitude intermittently or pulsatively prescribe medical powder inhalation force. toward within lungs of the patient in case of the medical powder. fifth embodiment, by means of the flap valve 67 it According to the structure of the blister pack embodiment insures adequate diffusion of the lungs of the patient, only when the strength In other words, Furthermore, And thus, the blister μ. Τ the blister pack is Ŋ. possible a weak pack of

medical powder, medication. thus enhancing an efficiency

[6800]

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blister pack 21 having eight eight medical powder although the inhalant medicator circumferentially spaced from each other, the invention number of the recessed fit portions 8A of the holder 8, be used in the inhalant medication. blister pack having nine or more blistered portions may two or more and seven or described herein. is not limited to the number identical to number In the first embodiment shown and described herein, of the pin insertion hole pairs 8B, 8C, and of recessed fit portions 8D must the number the particular embodiments shown In lieu thereof, a blister pack having storage chambers 25) less blistered portions, or a of the blistered portions. blistered is exemplified In this portions case, be set 23 (or

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20 [0090]

applied

to the second

appreciated,

such a modified construction may be

to fifth embodiments.

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panel 22, the invention is not limited to the particular portion extending in the radial direction of the base portion formed as a radially-elongated, elliptical convex blistered portions of the gourd-shaped convex portion forms a greatly reduced convex portion 23'. embodiments shown and described herein. can be appreciated from a modification shown in Fig. a blistered portion may be formed as a gourd-shaped ä the first embodiment, although each of 23 In such a case, the narrow portion is exemplified in In lieu thereof, a blistered

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of air flow through the thereby more effectively increasing the flow velocity flow-constriction passage between the two convex portions, orifice passage.

] [T600]

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## [Effects of the Invention]

properly adjusting the passage area of the passage, and whereby the flow velocity becomes fast. piercing in the blistered portion. When airflow flowing recited in claim 1, a flow-constriction orifice passage airflow passes through the flow-constriction orifice chamber is further directed to the outflow hole, the is provided between inflow and outflow holes pricked by from the inflow hole As set forth above, according to the invention as into the medical powder storage BY

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property of medical powder, it is possible to create the in the medical powder storage chamber into lungs of a prescribe a specified amount of medical powder pre-stored optimal airflow suitable for the medical-powder property. patient by way of breathing action. flow-constriction orifice passage depending on the reliability of the inhalant medicator result, it is possible to efficiently reliably 0 Hi the medical powder, thereby enhancing the This enhances medical

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[0092

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**3**0

orifice passage. operation, the flap valve closes the flow-constriction orifice passage and opens during inhaling operation. thus, in the case of a poor inhalation force during inhaling a flap valve is further disposed in the flow-constriction According to the invention as recited in claim 2, When the inhalation force has

possible to restrict or limit the flap valve opens the flow-constriction orifice passage increased up to a level enough to diffuse medical powder of the inhalation force. intermittently or pulsatively prescribe medical powder inhaling operation only in a state where the inhalation state where to permit airflow through the opened valve. enhancing an efficiency of medication. insures adequate diffusion of the medical powder, toward within lungs of a patient by adjusting the magnitude powder by airflow. force is strong enough to adequately diffuse medical the inhalation force is weak, and to permit Furthermore, And thus, the blister inhaling operation in a þ. is possible Thus, it pack thus

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20 75 powder storage chamber is further directed to the outflow blistered portion to pre-store medical powder medical powder located in the medical powder collecting When airflow flowing from the inflow hole into the medical a medical powder collecting portion is recessed between portion from the uppermost portion. hole, the airflow acts to gradually fling up and diffuse inflow and uniformly diffuse a small amount of According to the invention as recited in claim outflow holes pricked by piercing Thus, it is possible medical therein. in the powder

[0094]

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medical powder flow mass Additionally, holes from being choked up with such a large As a result, it in the case ۵, ۲۰ possible flown that inhalant medication out to avoid the outflow ) († μ breath. amount 0 Hi

during the breathing action. inhalant medication, thus ensuring a stable medication inhale the medical powder little by little. made to a patient having a weak trachea, the patient can patient from getting a fit of coughing during the This prevents

6600

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patient can inhale the medical powder stored in the storage out of the outflow hole at a breath. around the outflow hole, and as a result it is possible hole forcibly pushes out the medical powder accumulated airflow flowing from the inflow hole toward the outflow by piercing in the blistered portion and to define a deep chamber for a short time period. to flow the medical powder stored in the storage chamber the outflow hole the medical powder storage chamber, is accumulated around portion at a side of an outflow hole pricked by piercing in the blistered portion, a sloped surface is formed [9600] in the blistered portion. define a shallow portion at a side of an inflow hole pricked According to the invention as recited in claim by way of the sloped surface. the medical powder, stored in As a result, the

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portion at a side of an outflow hole pricked by piercing by piercing in the blistered portion and to define a shallow the medical powder storage chamber, is accumulated around in the blistered portion. define a deep portion at a side of an inflow hole pricked in the blistered portion, outflow hole According to the invention as recited in claim by way of the sloped a sloped surface is formed The medical powder, stored in surface.

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N 5

uniform dispersion of medical powder in air. the medical powder from being stably supplied little by adequately diffuse the medical powder, thereby ensuring airflow flowing out of the inflow hole collides directly the medical powder, and thus it is possible This enables t 0

[Brief Description of the Drawings]

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[Figure 1]

10 pack of the first embodiment of the invention is applied. illustrating an inhalant medicator to which the blister FIG. 1 is a longitudinal cross-sectional view

[Figure 2]

medicator. FIG. 2 15 5. plan view illustrating the inhalant

[Figure 3]

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inhalant medicator shown in Fig. illustrating details of only a medicator body FIG. 3 is a longitudinal cross-sectional 1 0 H View

[Figure 4]

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בי the medicator body, taken along the line IV -Fig. FIG. 4 is a longitudinal cross-sectional view IV shown

[Figure 5]

1) U along the line V medicator body and a positioning mechanism, FIG. 5 is a lateral cross-sectional view illustrating V of Fig. 1 taken

[Figure 6]

pack holder. FIG. 6 is a plan view illustrating only a blister

[Figure 7]

pack holder. FIG. 7 is a bottom view illustrating only the blister

of the first embodiment as viewed from its bottom side. FIG. 8 is a perspective view of only a blister pack

[Figure 9]

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blistered portion. FIG. 9 is a bottom view illustrating YTEG

10 flow-constriction orifice passage. view showing the essential part of the blistered portion, the medical FIG. 10 is an enlarged longitudinal cross-sectional powder storage chamber, and the

[Figure 11]

7 5 medical powder stored in the storage chamber of the blister pack illustrating the is inhaled. FIG. 11 is a inhalant medicator in a state where longitudinal cross-sectional view

[Figure 12]

N 0 within the medical powder storage chamber of the blister Yiew illustrating FIG. 12 is an enlarged longitudinal cross-sectional the airflow and medical powder

[Figure 13]

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of the second embodiment as viewed from its bottom side. FIG. 13 is perspective view of only a blister pack

[Figure 14]

view showing the essential part of the blistered portion, FIG. 14 is an enlarged longitudinal cross-sectional

flow-constriction orifice passage shown in Fig. the medical powder storage chamber, and

[Figure 15]

v

pack during the initial stage of inhaling operation. within the medical powder storage chamber of the blister illustrating FIG. 15 is an enlarged longitudinal cross-sectional the airflow and medical powder flow

[Figure 16]

40 pack within the medical powder storage chamber of the blister View during the middle stage of inhaling illustrating the airflow and medical powder 16 is an enlarged longitudinal cross-sectional operation. **£10w** 

Figure 17]

0 Hi the third embodiment as viewed from its bottom side. FIG. 17 is a perspective view of only a blister pack

[Figure 18]

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shown in Fig. view showing the essential part of the blistered portion, the medical powder storage chamber, and the sloped surface FIG. 18 is an enlarged longitudinal cross-sectional 17.

[Figure 19]

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pack within the medical powder storage chamber of view illustrating the airflow and medical during FIG. 19 is an enlarged longitudinal cross-sectional the initial stage of inhaling operation. powder the blister

[Figure 20]

1) (5)

pack during within the medical illustrating FIG. 20 is an enlarged longitudinal cross-sectional the middle stage of powder storage chamber of the blister the airflow and medical inhaling operation. powder f10w

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[Figure 21]

of the fourth embodiment as viewed from its bottom side. FIG. 21 is a perspective view of only a blister pack

[Figure 22]

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view showing the essential part of the blistered portion, shown in Fig. 21. the medical powder storage chamber, and the sloped surface FIG. 22 is an enlarged longitudinal cross-sectional

[Figure 23]

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pack during the initial stage of inhaling operation. within the medical powder storage chamber of the blister view illustrating the airflow and medical powder flow FIG. 23 is an enlarged longitudinal cross-sectional

[Figure 24]

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pack within the medical powder storage chamber of the blister view illustrating the airflow and medical powder during the middle stage of inhaling operation. FIG. 24 is an enlarged longitudinal cross-sectional

[Figure 25]

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embodiment of the invention. flow-constriction passage, and the flap valve in the fifth the lid panel, the medical powder storage chamber, view showing the essential part of the blistered portion, FIG. 25 is an enlarged longitudinal cross-sectional

[Figure 26]

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blistered portion of the modification made according to the invention. 26 is a bottom view illustrating only the

[Description of Reference Signs]

1, 31, 41, 51, 61 Blister Pack

26, 9 33, 43, 45, Flow-constriction Passage Sloped Surface 53, 55, 64 Lid Panel

32, 42, 52,

62

Base Panel

63, 23' Blistered Portion

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Medical Powder Collecting Portion

Flap Valve (Valve Body)

Inflow Hole

H2 Outflow Hole

[DOCUMENT NAME]

ABSTRACT

of the medical powder. in a medical powder storage chamber depending on a property efficiency by properly diffusing medical powder stored [Object] It is an object to enhancing a medication

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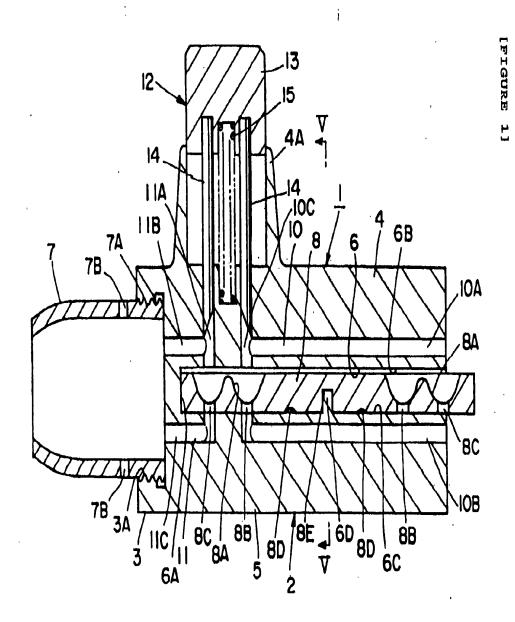
10 15 passage area of the powder stored in the medical powder storage chamber 25 property of medical powder. 26, it is possible to create airflow suitable orifice passage 26. hole H2 can be increased by way of the flow-constriction velocity of airflow from the inflow hole H1 to outflow portion 23C of a blistered portion 23. Thus, the flow inflow and outflow holes H1 and H2 by a flow-constriction flow-constriction orifice passage 26 located between [Means to solve] blister pack 21 is configured to define A medical powder storage chamber 25 Additionally, by adjusting the flow flow-constriction orifice passage Therefore, the medical

by way of breathing action. medical powder storage chamber 25 into lungs of a patient specified amount of medical powder pre-stored in the result, it is possible to efficiently prescribe to the medical-powder property, and whereby the medical can be properly diffused by way of powder can be efficiently blended with airflow. As a the airflow suited

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[Selected Drawing] Figure 12

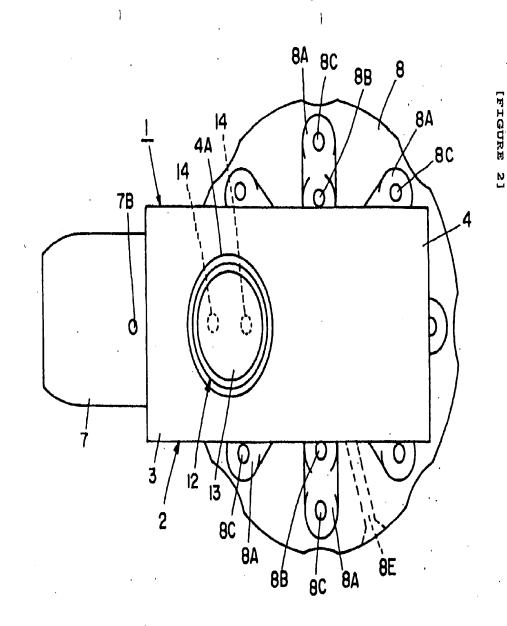


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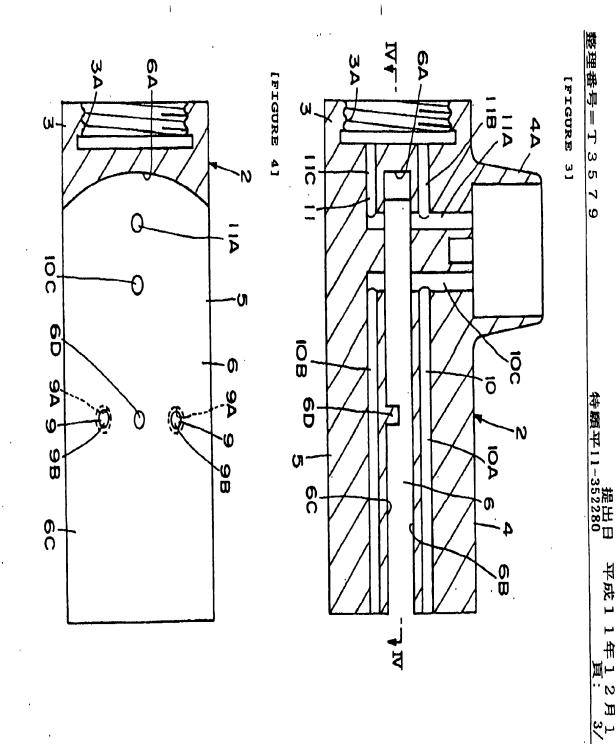
[DOCUMENT NAME] DRAWING

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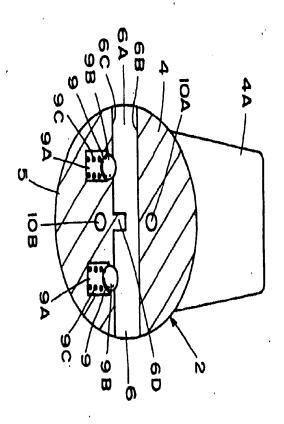
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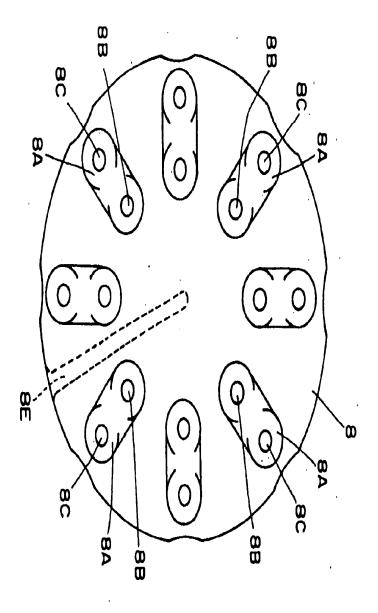
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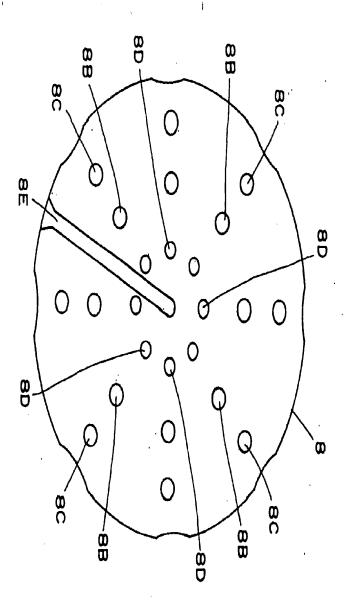
[FIGURE 5]



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[FIGURE 7]



[FIGURE 8]

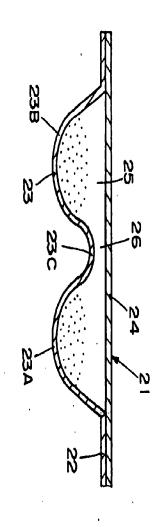
23C-[FIGURE 9] 23B 23 23 N 23C 4. 234 23C N N 23**B** B 23

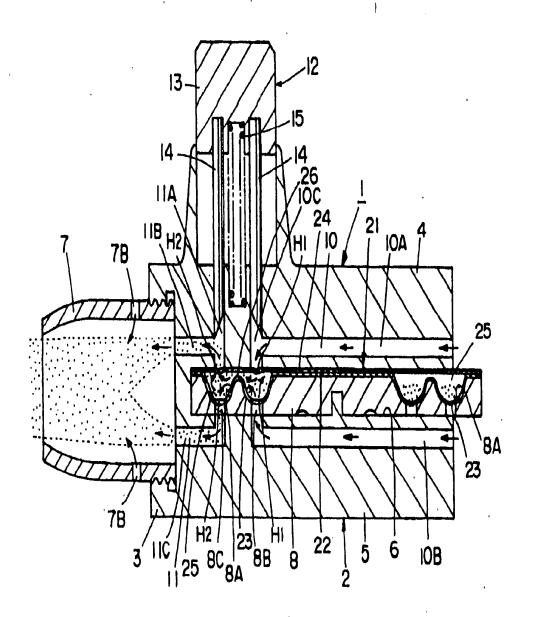
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23B

23A

[FIGURE 10]





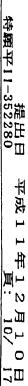
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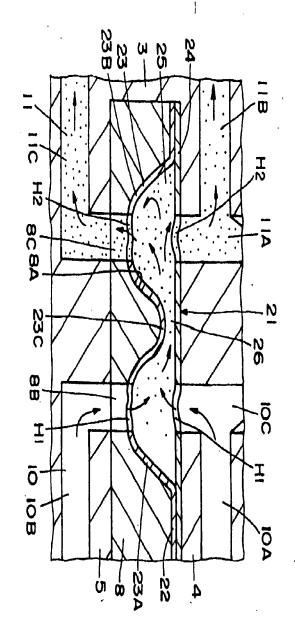
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[FIGURE 11]

[FIGURE 12]





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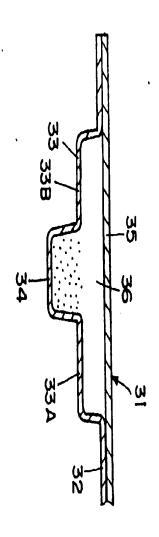
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[FIGURE 13]

34 **33B** 338 33 34 33A 32 33A US. 33B 33

[FIGURE 14]



整理番号=T3579 [FIGURE 16] [FIGURE 15] 33B IN 36 提出日 特願平11-352280 `35 平成11年12月10日 頁: 12/ 17

**338** 

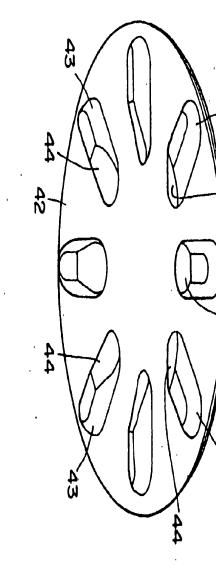
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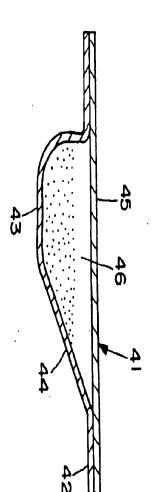
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[FIGURE 17]



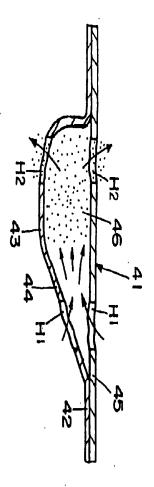


[FIGURE 18]

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H2 46 41 H1 45
H2 43 44 H1

[FIGURE 20]

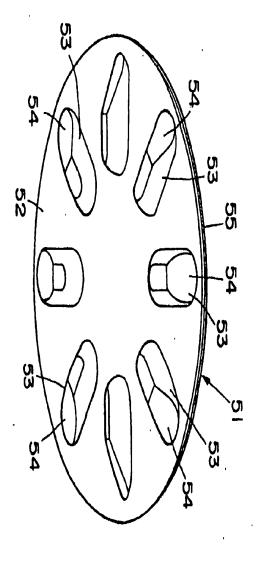


[FIGURE 19]

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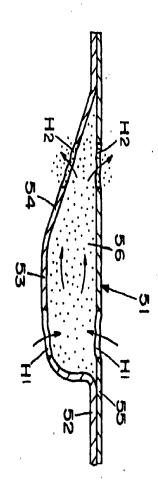
[FIGURE 22]

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[FIGURE 24]



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[FIGURE 23]

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[FIGURE 25]

[FIGURE 26]

